Unrolling Loops With Partial Hot Traces

ABSTRACT OF THE DISCLOSURE

Methods and apparatus are disclosed for improved loop unrolling by a compiler. A large class of loops exists for which effective loop unrolling has not previously been performed because they are too large to be completely unrolled, but which do not have a single hot trace that covers an entire loop iteration. The present invention recognizes such loops that have partial hot traces identified using profile data. A set of instructions which constitute a proper superset of the hot trace and a proper subset of the entire loop, and which forms a complete loop iteration is identified. This set of instructions can then be unrolled without unrolling the entire loop.